DOCUMENT RESUME

ED 091 401 TM 003 610

AUTHOR Kuethe, James L.
TITLE Transfer, Retention, and Achievement as Measures of School Success.
NOTE 7p.

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS Academic Achievement; Achievement Gains; *Evaluation Criteria; Evaluation Needs; Learning; Retention; Schools; *Success Factors; *Transfer of Training

ABSTRACT

The frequent claim that programs have failed and that the schools themselves have failed are largely based on one measure of success: achievement scores. This paper raises the question of whether or not alternative criteria of success might not be more appropriate. Gains in learning and the extent to which school learning is transferred to situations outside the school are discussed as alternatives. For example, two children with quite different achievement scores might make equal use of school learning in non-school situations. By the first, (traditional) criteria one child is more successful than the other while by the second criterion (transfer) both children have profited to the same extent from their school experience. The discussion suggests the possibility that sub-populations that are less successful in the schools may be victims of inappropriate criteria of success. We need to develop effective measures of the extent to which people make use of (transfer) what they learn in school as well as measures of gains in learning. (Author/MLP)

ED 091401 :

T: 003 610

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Transfer, Retention, and Achievement as Measures of School Success

James L. Kuethe

State University of New York at Albany

All advanced societies maintain an educational system and usually require their citizens to attend school for a certain number of years. What is the justification for this costly and time consuming practice? It would be impossible to list all of the views of educational philosophers nor should we expect that they would surprise us by deciding that this is the one topic on which they all agree. Reading the "goals and objectives" listed by those who design the curriculum would not be any more likely to tell us why societies commit so much of their resources to the process of education.

One thing is certain. All societies assume that education can produce changes in people's behavior and thought processes. In other words, when you educate someone, he learns something. On this there is essentially universal agreement. The disagreement is over how the material that people learn in school justifies (or should justify) maintaining the schools. Economists, nationalists, sociologists and humanitarians, would all have different answers.

There is a basic assumption hidden behind any justification of the process of learning. All education is based on a very important assumption: that what is learned in the classroom may be employed in other situations, or, in other words, that changes in behavior acquired in the classroom are not confined to the classroom. The term transfer is used to designate the manifestation of learning in a situation different from the situation in which the learning took place. If we denied the

existence of transfer it would be equivalent to saying that one learns in school in order to do better in school. When we are talking about the acquisition of basic skills, we might say that one does learn in school in order to do better in school but perhaps it would be more accurate to say that in such a case some things are learned as a prerequisite to further learning. However, the ultimate intention of schooling is to equip the individual with skills and information that will allow him to function successfully in the adult society outside of the classroom.

It is obvious that transfer does in fact take place. The person who leanred to read in elementary school using special textbooks is able, as an adult, to read anything from his evening paper to advertisements written with smoke in the sky. Again, after learning to count in school using a relatively limited range of objects, the adult is able to count the members of any class of objects. Transfer occurs at every level of the education enterprise; in his private practice the physician uses techniques that he acquired in medical school, just as the engineer computes stresses and loads using principles that he learned in college. Knowing that transfer of school learning does occur still leaves several important questions.

Under What Conditions is There Transfer of School Learning?

While it is true that we can find many examples of the transfer of classroom learning, transfer is not as general or consistent as many people would like to believe. Classical studies have shown that studying geometry does not make one more logical in one's reasoning when dealing with propositions outside of the context of geometry. Learning Latin was assumed to improve English vocabulary understanding. This was shown not

to be the case unless the teacher specifically emphasized the transfer of possibilities through examples.

William James gives an example of class discussion that clearly reveals the absence of transfer: "A friend of mine, visiting a school was asked to examine a young class in geography. Glancing at the book she said: 'Suppose you should dig a hole in the ground, hundreds of feet deep, how should you find it at the bottom - warmer or cooler than on top?' None of the class replying, the teacher said, 'I am sure they know, but I think you don't ask the question quite rightly. Let me try.' So taking the book she asked: 'In what condition is the interior of the globe?' and received the immediate answer from half the class at once: 'The interior of the globe is in a condition of igneous fusion.'"

These lessons of the past have not produced transfer if the contemporary opinions of the public are taken as the criteria. Within the last month on Evening Edition, Martin Agronsky interviewed Donald Segretti. At one point the conversation (paraphrased by me) went as follows:

Agronsky: Didn't they teach you anything about ethics in law school?

Segretti: I didn't take a course in ethics in law school, it wasn't required. I don't believe it is required in most law schools. It might have been offered as an elective.

Agronsky: If you had had a course in ethics do you think that you might have acted differently - made different decisions?

Segretti: Perhaps I would have looked at things differently - thought things over in a different way before deciding.

Agronsky and Segretti are both highly educated, very sophisticated men. Yet they both implicitly accept the assumption that taking a course in ethics will cause a man to behave more ethically when making decisions years later. This faith in the transferability of all forms of schooling, regardless of subject matter, is no less pervasive in the general public.

The Criteria of School Success: Achievement vs. Transfer

In general, a child is regarded as doing well in school by his teachers and parents if he receives high grades. When a child's grades are good we say the school is successful and the child is bright. If a child's grades are poor, we question the school's methods and attempt to analyze the child's problem with the hope that we can discover some intervention that will lead to good grades for this child.

When all children receive good grades we sit back with the comfortable knowledge that our educational system is a success. We might be less comfortable if we realized that the original problem as well as its resolution hinged on a particular definition of school success - high teacher ratings (grades) and acceptable scores on standardized achievement tests.

High achievement in school is predictive of future school achievement from the earliest years thru graduate school. In fact, past school performance is a better predictor of future school performance than any other single predictor including standardized achievement tests and I.Q. measures. I.Q. scores do predict school performance to a considerable degree but this should not be surprising. Examination of the content of the items on I.Q. tests reveals that these tests are, to a large extent, achievement tests. Vocabulary is taught in school and achievement is measured by vocabulary tests and many other forms of verbal performance. However, vocabulary forms the backbone of the leading I.Q. tests, correlating more highly with total I.Q. score than any other subtest. Leaving aside the question of the extent to which I.Q. tests measure innate intellectual capacity, it can be argued that the correlation between I.Q. and grades can be regarded as a correlation between two very similar measures of achievement.

But to what extent do we attempt to evaluate the success of schools in producing the changes we really regard, at least implicitly, as important and as the justification of the schooling process? I am referring to the long term retention of what is learned and the transfer of knowledge (facts and concepts) and skills (techniques) to life beyond the school walls.

If school learning is to transfer to situations that arise years after formal schooling has been completed, the learning must be retained for that long. Unfortunately, we have very little reliable data on the long term retention of school learning. Students pass tests during the learning of some specific material and immediately upon completion of the unit. They then move on to new material and little is done to measure their retention of the old material after any substantial lapse of time. We do know that the retention of some material is very poor. Few of us could today pass the final exams we passed with flying colors years ago. Many of us would be unable to get even a single item correct. We would be unable to demonstrate, except by our college transcript, that we had even taken a course in chemistry. Most of us learned how to determine a square root with paper and pencil but few could do it today. The examples are endless but even a few demonstrate that much of what is learned in school is retained only long enough to pass the achievement tests used to certify that we have been educated.

There are many problems involved in the study of long term retention. One of the most difficult problems is the absence of knowledge about the rehearsal history of the specific learning under investigation. Many things that we know, we know not just because we once learned them in school but because we have made use of the knowledge over the years. This practice, or rehearsal, prevented the forgetting that would otherwise have

occurred. However, troublesome as this may be for the researcher investigating long term retention, it may be a pseudo-question to the educator. From the viewpoint of the educator, if long term retention is based upon rehearsal that occurs because the material is useful, the original instruction and learning has been justified. If we accept the assumption that long term retention requires rehearsal and that rehearsal occurs because the material is useful, we, as educators, have another reason for studying long term retention. We should be able to identify which things taught in the schools are useful to the learner by determining what is retained for a long time and what is quickly forgotten. Investigations of this sort could lead to recommendation for changes in the curriculum. What students should learn is a matter of opinion but what they remember and what they forget can be empirically determined.

The Relation Between Retention and Transfer

Transfer seems to depend upon retention but it could be argued that long term retention depends upon the transferability of what is learned. This argument would follow from the assumption that long term retention depends on the material being "useful." By useful we may mean that a person employs what he has learned in situations different from the one in which the original learning took place, by definition, the transfer of learning. It may well be, then, that we remember what we can transfer and the more often we can transfer, the longer we remember.

Changing the Criteria of School Success: Consequences for Remedial Education

Some children do better in school than others as determined by the achievement measures now in use. These differences are predictable by achievement tests that masquerade as ability measures. When an identifiable

sub-population fails to achieve, remedial programs are instituted. The intention of these programs is to raise the achievement scores of the sub-population to the level of the population with which they compare unfavorably. These programs have, in general, been unsuccessful. The target populations have not made the gains in achievement scores promised by the proponents of the special programs. But perhaps gain in achievement scores is the wrong place to look for gain.

If the true measure of school success is not achievement scores but is instead the transferability of what is learned, here is where we should look for gains. The child who is low in achievement scores may make use of school learning outside of the classroom to the same extent as the child with higher achievement scores. By the true measure of school success both children would have been educated to the same extent.

We need to develop effective measures of the extent to which people make use of (transfer) what they learn in school. This endeavor may go hand in hand with investigations of the long term retention of school learning. Only then can we talk meaningfully about school success. Only then can we talk about who does and does not need remedial help or the form that it should take.